

PHOSPHOR, LIGHT EMITTER USING THE SAME AND LIGHTING APPARATUS

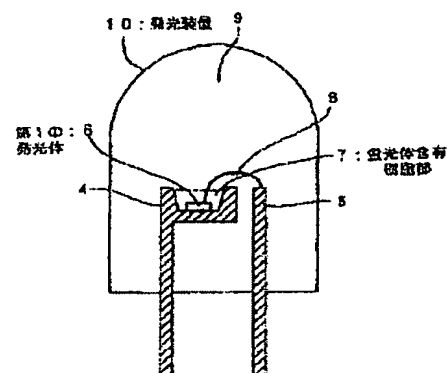
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PROBLEM TO BE SOLVED: To obtain a red phosphor which attains sufficient wavelength adjustment and sufficient emission intensity in a wavelength range of 350-415 nm and is effective for achieving a white color of white LED using a near-ultraviolet LED as a light source.

SOLUTION: The phosphor comprises an oxynitride and/or an oxysulfide containing at least one kind of an element selected from the group consisting of Ti, Zr, Hf, Nb, Ta, W and Mo. The phosphor comprises an oxynitride having alpha sialon structure in which a part or all of Al element is substituted with Ga element. The phosphor comprises an oxynitride and/or an oxysulfide and has $\geq 20\%$ quantum absorption efficiency at 400 nm wavelength, $\geq 40\%$ internal quantum efficiency and ≥ 580 nm and ≤ 780 nm main emission peak wavelength. The red phosphor which is excited by light of long wavelength (450-415 nm) from GaN, ZnO, etc., and exhibits high emission intensity is obtained. The white LED having excellent color rendering properties is produced by the phosphor. The lighting apparatus is actualized.

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